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ABSTRACT

The purpose of this study was to determine whether family income is associated with student choice of higher cost versus lower cost colleges. Family income, level of Tuition Assistance Program (TAP) award, and selected personal characteristics of a sample of 4,500 TAP recipients were examined to determine attendance patterns at 11 public and independent degree-granting institutions in New York. The study's major finding was that constraints imposed by family income do not significantly influence choice of institution when TAP recipients are accepted at two or more institutions with varying cost characteristics. The student demand questionnaire is included in an appendix. (Author)

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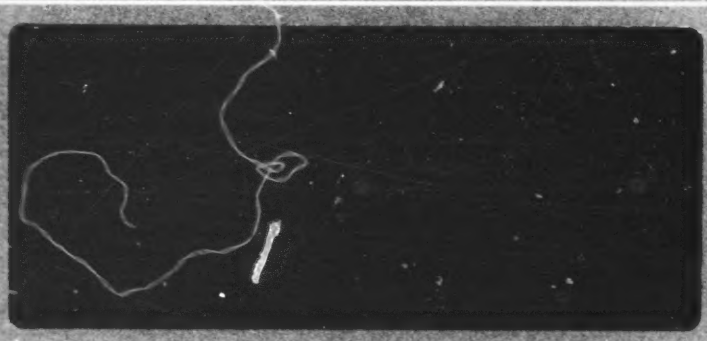

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Tuition Assistance and Income Neutrality in College Choice: The Case of New York's Tuition Assistance Program

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I. Introduction

In 1974 New York created the Tuition Assistance Program (TAP), probably the country's most comprehensive and costly state-level effort to help low and middle-income students meet college costs. The TAP program has two major objectives:

> ...to reduce financial barriers to postsecondary study for low-income and middle income students and, to provide such students with greater freedom of choice in choosing institutions that best meet their educational needs, whether the institutions are under public, independent or proprietary sponsorship.(Board of Regents, 1976, p. 22)

TAP awards are based on net taxable income: the lower the income, the higher the award. Almost 275,000 grants are awarded annually with a total cost to the State in excess of $100 million. Students with family incomes as high as $20,000 per year are eligible for awards. The maximum awards for low-income students are $850 for those attending public institutions and $1800 for those attending private institutions. Both undergraduate and graduate students are eligible to receive TAP awards.

In the study reported here we examine whether the freedom of choice objective is being achieved. We consider freedom of choice to be achieved when family income is found to not be an important factor in the decision made by students and their families about which college to attend. Thus, we sought to determine if family income is associated with the decisions made by TAP recipients to attend higher-cost versus lower-cost colleges. To accomplish this purpose, the family income, level of TAP award and selected personal characteristics of a sample of almost 4500 TAP recipients were examined to determine the patterns of attendance at virtually all public and independent degree granting

institutions in New York State. The 4500 first-time TAP recipients were respondents to a mail survey conducted in the 1976-77 academic year by the Office of Postsecondary Research, Information Systems and Institutions Aid of the New York State Education Department (NYSED).

An earlier NYSED study conducted in the first academic year of the program (1975) suggested that the increased access and freedom of choice objectives of TAP were achieved. The Department found that:

- nearly one-half of TAP recipients in independent colleges would not have attended the same institution without an award.
- nearly three out of four of those who would have chosen a different institution, stated that they would have instead attended a public college in New York State
- approximately one of every five TAP recipients attending State University of New York institutions said they would have chosen a different institution without their TAP award (Board of Regents, 1976, pp. 23-24).

The State Education Department concluded that without TAP awards, significant numbers of students would have attended different higher education institutions, and many of those in private sector colleges would instead have selected a public institution. Not only were the objectives regarding individual access and choice apparently being achieved, but TAP also seemed to be particularly important for the fiscal viability of institutions in the private sector. Moreover, the unfunded student aid programs of independent institutions which had increased from 49.6 million in 1970-71 to 59.4 million in 1972-73 had stabilized by the first year of TAP at 59.2 million (Higher Education Service Corporation, 1976, p. 3). In addition, an overall benefit to New York State seemed to be occuring in that the in-state college going rate, which had been relatively stable prior to 1974, increased from 51.4% in 1974 to 52.9% in 1975 (HESC, 1976, p. 3).

The Decision Process in Choosing Colleges

For many students deciding where to attend college involves three individual decisions: whether or not to attend, where to apply, and where to enroll given acceptance at more than one institution.* Some students, of course, make all three decisions simultaneously. For example, the decision to apply to an open enrollment institution may be identical with the act of deciding to attend college. For other students college attendance is a foregone conclusion and the only questions concern where to apply and where to attend among those institutions to which one is accepted. Even if individual students do not engage in each individual step in the college decision process, differences in family income and other student characteristics may well have different effects on the three decisions.

Family income can be an important factor in determining who enters the market for a college degree (Corazzini, Dugan, and Grabowski, 1972), and in the decision about which institution to attend. Among all the factors that may affect student choices about whether to attend college, where to apply and where to enroll, cost of attendance is one of the few factors that is amenable to public policy interventions. Many factors in addition to tuition costs and family income affect the decision process including personal characteristics such as individual aspirations, peer influences, sex and race; family characteristics such as educational attainment of parents and the number of college age siblings; the particular programs offered by colleges and the selectivity of institutions of higher education; and the proximity of available institutions.

Standing alone, family income matched with college cost may have marginal effects on college choices. One set of estimates of the effects of changes in

*Spies (1973) suggests that there is a fourth decision concerning applying for financial aid that is made before the decision to enroll once admitted.

college tuition rates suggests that, standardizing for 1974 dollars, each 100 dollar increase in tuition will result in only a 2.5 percent change in enrollment (Jackson and Weatherby, 1975). However, in some types of institutions and in middle and upper-income categories, the effect of increased cost of college attendance may be negligible. For example, when Spies estimated the enrollment decision for very expensive and selective institutions, he found that financial consideration seems to have a relatively small effect on student decisions. Instead, Spies concluded that the major determinants of the student's college choice are his/her academic ability and the quality of the schools being considered (Spies, 1973).

One estimate of the effects of cutting tuitions in half for all students at all institutions indicated that enrollments would increase by 20 percent (McPherson, 1977). Students from low-income families are more responsive to price changes in higher education than those from middle or upper income families (Jackson and Weatherby, 1975). Kohn, Manski and Mundel found that each 100 dollar increase in cost would reduce enrollments of low income students by 2.95-3.26 percent, depending on the type of institutions attended, while the effects on high income students were always less than one percent for each $100. Christensen, Melder and Weisbrod (1975) estimated that a tripling of family income (from $7,000 to $20,000 per year) would raise the probability of attendance 9-10 percentage points.

The differential effects of college cost on low income students, of course, have prompted the massive intervention programs such as TAP and the federal government's basic Educational Opportunity Grant (BEOG) program. The actual role of low-income status and variations in college costs may have relatively minor effects on total numbers of low income students attending college, but those

effects are likely to be highly important to the particular individuals involved as well as to colleges that are greatly concerned about the marginal impact of enrollment shifts.

Income status and college cost may play a greater role in the decision to attend and the application stages then in the enrollment decision. For example, Spies (1972) concluded that while the costs to attend elite liberal arts schools significantly affect application decisions, enrollment decisions are uncorrelated with financial conditions. On the other end of the scale, the imposition of an annual tuition of several hundred dollars at the City University of New York (CUNY) in 1975 was associated with a 7 percent decline in freshmen enrollments (New York State Education Department, 1978). Since CUNY serves many low and low-middle income students, the inference is that the increased cost, though partially off-set by TAP payments, had a negative effect on the college choice decisions made by low-income students in New York City.

Changes in college costs and shifting tuition support may also produce shifts in college choice decisions by middle-income students. Many higher education institutions have reduced their institutional aid to students, and those primarily affected are middle-income students not eligible for federal or, in most states, state-level assistance programs. Leslie and Fife (1974) suggest that reductions in institutional aid may be reducing enrollments in four-year institutions among middle class students, who may be turning to community colleges.

In sum, differences in college costs seem to have small but perceptible effects on college attendance decisions among students in different income groups. Students from low-income families are affected more strongly than those from upper-income families, though some of the latter may choose not even to apply to

very expensive institutions to which they might be admitted. Many factors affect enrollment decisions to a far larger degree than cost. Finally, though the empirical research seems to suggest a good deal about the relationship between college cost and application and attendance patterns, there seems to be little systematic evidence about the effects of differences in cost on student decisions when students have clear options between institutions with different cost implications.

This study was designed to primarily address that concern. We are primarily interested in those students in our sample of almost 4500 TAP recipients who applied to and were accepted at two or more institutions of higher education, where there were differences in the net cost to the student. Specifically, are there differences in family income between those students who chose to attend higher-cost institutions and those who elected to attend a lower-cost school? Given a choice between a higher-cost and a lower-cost institution, if the differences in family income between those TAP recipients who made different choices are statistically significant, then income would seem to not be a factor in the choices made.

II. Research Procedures

Data used in this study were obtained from three sources. First, the New York State Education Department's survey instrument (Appendix A) provided information on the institutions accepted at and attended, and on academic ability. The survey was mailed to 13,392 first-time TAP recipients and 4,432 usable responses were returned. Data about the amount of TAP award for each student in the survey were obtained from TAP applications, and family income was inferred from the award amount adjusted for the number of siblings also in college. Data about institutional cost (tuition, room and board. fees) and selectivity

(average SAT of entering freshmen) were obtained from The New Guide to Colleges, 1976 and Student Expenses at Postsecondary Institutions, 1977-78.

A three-step analysis procedure was used to provide descriptive data concerning student choice. In the first step all colleges listed by TAP recipients who responded to the survey as (a) applied to, (b) accepted at and (c) attended were classified according to cost and selectivity. Institutions were ranked from high to low and assigned to one of four groups for each measure. Tables 1 and 2 show the number of institutions and the number and percentage of students who applied to and attended institutions by the four cost (Table 1) and the four selectivity (Table 2) categories. Almost 44 percent of the institutions to which TAP recipients applied were out-of-state while 22 percent were in-state public and 33 percent were independent New York institutions. Better than 26 precent of the applications were to high and medium-cost institutions, and 21.6 percent of the students attended such institutions. Similarly, about one out of every three applications were to higher selective or very selective institutions, but only 23.5 percent of TAP recipients attend such institutions. More than half of the TAP recipients responding to the survey attend very low cost non-residential institutions and better than six out of every ten attend low selective schools.

Table 1
Distribution of TAP Recipients by Cost of IHEs
Applied to and IHEs Attended[1]

Cost	Applied to			Attended		
	# of IHEs	# of Applications		# of IHEs	# of Recipients	
High Cost (> $5500)	99	916	(15.1%)	41	494	(11.9%)
Medium Cost ($4301-5499)	91	677	(11.2%)	39	403	(9.7%)
Low Cost (< $4301)	99	1771	(29.2%)	56	1112	(26.9%)
Non-residential[2]	50	2689	(44.4%)	50	2129	(51.4%)
	339	6053	(100.0%)	186	6053	(100.0%)

[1] Approximately half the IHEs are in the two higher groups and half in the lower.
[2] Institutions that do not have residential facilities.

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Table 2
Distribution of TAP Recipients by Selectivity of IHEs
Applied to and IHEs Attended[1]

Selectivity	Applied to			Attended		
	# of IHEs	# of Applications		# of IHEs	# of Recipients	
High Selective (SAT ≥1160)	76	964	(14.7%)	25	389	(9.4%)
Very Selective (SAT 1050-1159)	84	1169	(17.8%)	42	584	(14.1%)
Moderately Selective (SAT 1000-1049)	64	1305	(19.8%)	30	638	(15.4%)
Low Selective (SAT ≤ 1000)	115	3131	(47.6%)	89	2527	(61.4%)
	339	6569	(100.0%)	186	4138	(100.0%)

In the second step family income, and selected personal characteristics were compared among students who were accepted at two or more institutions with different costs, two or more in the same cost category, and at only one institution.

In the third step, the relationship of family income to the enrollment decision was examined directly by comparing a number of subsets of the student sample. TAP recipients who had a choice between institutions with different cost characteristics and chose to attend on with higher costs, were compared to recipients who chose the lower cost college, to determine if the differences between the two groups were statistically significant.

III. Analysis

Family Income and Attendance Patterns.

Average family income is higher for those students who attend higher-cost and higher-selective institutions than it is for those attending low-cost, low-selective institutions. In Table 3 the two highest and two lowest cost and selectivity groups of IHEs are combined. The highest family income is found in

[1]Approximately half of the IHEs are in the two more selective groups and half in the two less selective.

the high-cost, high-selective institutions and the next highest in the high-cost, low-selective group. Students attending non-residential, lower-selective institutions have on the average the lowest level of family income.

Table 3
Family Income for TAP Recipients
by IHEs Cost and Selectivity[1]

	Higher Selective (SAT > 1050)	Lower Selective (SAT < 1050)
Higher Cost > $4,300	N = 594 $11,072	N = 275 $10,091
Lower Cost < $4,300	N = 343 $9,716	N = 2752 $9,198

While higher family income is associated with attendance at higher-cost, more-selective institutions, the number of TAP recipients with high SAT scores (above 1200) do not all select the more costly, more selective institutions. Table 4 shows that 60 percent of those TAP recipients for whom we have SAT score data attend lower selective institutions, and about half of the most able students remain in the lower cost schools. Moreover, about half of these students with SAT scores above 1200 who recieve TAP awards also attend the less selective institutions. Indeed, while almost four out of every ten TAP recipients who attend the more costly, more selective institutions have SAT scores above 1200 compared to only nine percent in the lower-cost, lower-selective schools, more than 40 percent of the high ability TAP recipients attend the latter group of institutions. The availability of TAP awards clearly has not resulted in a situation in which high ability students uniformly choose to attend highly selective institutions.

[1]The two highest and two lowest of the four cost and selectivity groups are combined in this table.

Table 4
Percentage of High Achieving TAP Recipients
by IHEs Cost and Selectivity

	More Selective (SAT > 1050)	Less Selective (SAT < 1050)	Total
Higher Cost >$4,300	39% (N = 182)	7% (N = 33)	46% (N = 215)
Lower Cost <$4,300	14% (N = 64)	41% (N = 190)	55% (N = 254)
Total	53% (N = 246)	48% (N = 223)	100% (N = 469)

Family Income and Acceptance

Family income is also higher for those students accepted at two or more institutions than it is for those accepted at only one institution. Table 5 shows that half of the TAP recipients included in the survey were accepted at only one higher education institution, so they did not have a choice to make at this stage. Twenty percent were accepted at two or more institutions within the same broad categories, so their choices were only minimally concerned with cost differences. Only three out of every ten TAP recipients had a choice to make with respect to where to erroll, between two or more institutions with different cost characteristics.

The higher the income, the more likely that students would be accepted at two or more institutions with different costs. Indeed, those with a cost choice had an average family income about 25 percent higher than those who were accepted at only one institution ($10,463 and $8,296). When income characteristics were sorted according to higher versus lower cost institutions, the highest family income is found in those recipients who attend higher cost IHEs and were accepted at two or more institutions with the same cost characteristics. Those who attended lower cost IHEs and were accepted at two or more institutions with the same cost characteristics had the second lowest income level. The lowest income level was found in those students who were accepted at only one institution and attended a lower cost IHE. Since the number of acceptances to higher education institutions are strongly associated with the decision about where to

apply, there would seem to be a connection between family income and application decisions.

Table 5
College Acceptance of TAP Recipients by Family Income and Cost of IHE

	Accepted at Two or More IHEs of Different Cost	Accepted at Two or More IHEs of Same Cost	Accepted at Only One IHE
Percent of All Recipients	30%	20%	50%
Average Family Income	$10,463	$ 9,578	$8,296
Average Family Income of Those Attending Higher Cost IHEs	$10,683	$11,637	$9,746
Average Family Income of Those Attending Lower Cost IHEs	$10,322	$ 9,202	$8,102

Family Income and Choice

The average family income of those TAP recipients who chose to attend a higher-cost institution when they also had been accepted at one with lower costs, is not statistically different from those who chose lower cost institutions. In Table 6 the family income of students who chose the more costly institution is compared to those who chose the less costly one. Four cost categories are used in this analysis: high cost, medium cost, low cost and nonresidential. For example, in the top row compare TAP recipients who were accepted at institutions with the highest cost, to those who chose IHEs with medium or low cost or ones that were non-residential (categories 1, 2, 3). While in each case the family income of those TAP recipients who chose the higher cost IHE is somewhat greater than those who chose the lower cost institution, these differences are not statistically significant with at least a five percent level of

Table 6
Comparison of Income of TAP Recipients Who Had a Choice of Attending Different Cost IHEs

Category	Chose Higher Cost IHE: N	Income Mean	Coefficient of Variation[1]	Chose Lower Cost IHE: N	Income Mean	Coefficient of Variation	Significance[2]
Accepted at High Cost (4) and Lower Cost (1, 2, 3)	241	$10,443	.56	312	$10,216	.53	n.s.
Accepted at Medium Cost (3) and Lower Cost (1, 2)	153	$11,052	.53	202	$10,747	.49	n.s.
Accepted at Low Cost (2) and Non-Residential (1)	140	$10,488	.47	202	$ 9,751	.52	n.s.

[1]The coefficient of variation is calculated as follows: $\frac{SD}{Mean}$

[2]Test used as statistical measure

confidence. Moreover, in each group the distribution of family income characteristics is roughly similar as indicated by the lack of difference in the coefficient of variation between those TAP recipients who chose higher cost and those who chose lower cost IHEs. Given a choice, the decision about where to enroll once accepted does not seem to be related to differences in family income, whether that choice includes the most costly institutions or whether it is between low cost, primarily public institutions and non-residential IHEs.

Institutional Selectivity and Choice

Given a choice, TAP recipients do not always make the decision that would seem to be most logical in terms of a simple cost-benefit rationale. Table 7 provides data about the institutions at which TAP recipients were accepted but chose not to attend. About one student in four (24.6 percent) did not choose an IHE that was less costly than the one to which he/she enrolled, and 30.5 percent did

not choose an IHE that was more selective than the one attended. Logical decisions would be to not choose IHEs in cells (noted in parenthesis) 4, 7, and 8. Those cells present a TAP recipient with a choice of an IHE that is either less selective for the same or greater cost, or more costly but not more selective. Recipients turn down attractive choices in cells 2, 3, and 6 and neutral choices in cells 1, 5 (same cost and selectivity), and 9 (more costly and more selective).

Table 7
Comparison of IHEs Accepted at But Not
Attended With IHEs Attended for TAP Recipients

IHE accepted Cost	IHE accepted at was: Less Selective N	%	Same Selective N	%	More Selective N	%	Total
Less Costly	519 (1)	12.8	343 (2)	8.5	132 (3)	3.3	24.6
Same Cost	404 (4)	10.0	1135 (5)	28.0	386 (6)	9.5	47.5
More Costly	127 (7)	3.1	289 (8)	7.1	715 (9)	17.7	27.9
Total	1050	25.9	1767	43.6	1233	30.5	100.0

Almost three out of ten acceptances are at IHEs of the same selectivity and cost as the IHE attended (cell 5). In this instance, the recipients have no quantitative judgment to make; only qualitative ones regarding the IHE's student body, program, location, and reputation. A possible inequity exists with respect to the decisions made in cell 9 where almost 18 percent of the acceptances occurred. Normally, an individual would be expected to attend the most selective IHE he/she is accepted at. Where the IHE is also more costly, it can only be assumed that this is a major cause for selecting another IHE. About one in

five TAP recipients did make the "logical" choice represented in cells 2, 3, and 6. On the other hand, one in five did not choose the IHE that would have been less selective or of the same selectivity or at the same cost (cells 4, 7, and 8).

Whether the choice is between a public and an independent IHE can also be related to considerations of cost and selectivity. Table 8 compares the choices made between independent and public institutions. The numbers and percentages in the table represent institutions <u>not</u> chosen. For example, the upper right hand cell shows that for those TAP recipients who chose to attend a public IHE in New York, 78.8 percent of the institutions not chosen were also public while 21.1 percent of the "other" institutions were independent. This indicates that in only one in five cases where the public institution was chosen, was the competition an independent IHE. In contrast, for those students who chose to enroll at an independent IHE, about half the institutions not chosen were public. Similarly, for those TAP recipients who chose an independent IHE to attend, only 24.5 percent of the time would the alternative choice have been more costly and 37.8 percent of the time would it have been more selective. For those recipients attending public IHEs, however, 81.3 percent of the institutions not chosen would have been more costly, and two-thirds would have been more selective than the one attended.

Table 8
Characteristics of New York State IHEs TAP Recipients Attending Public/Independent IHEs Were Accepted at but Did Not Attend

IHE accepted at	Attending Independent IHE		Attending Public IHE	
	N	%	N	%
Independent	659	49.0	482	21.1
Public	686	51.0	1801	78.8
More Costly	258	24.5	873	81.3
Less Costly	793	75.5	201	18.7
More Selective	382	37.8	851	66.8
Less Selective	627	62.1	423	33.2

Table 8 reflects the importance of application decisions, particularly in terms of whether or not a student will apply to both independent and public institutions. Those TAP recipients who attend independent IHEs are as likely to apply to a public institution as they are to another independent school, but those who attend public institutions in New York apply almost exclusively to such institutions in that sector and will tend to pick the more costly; those who choose independent institutions reject the more costly. Finally, those who attend independent IHEs tend to choose the more selective institution by a two to one margin, while those in public sector schools reject the more selective institution, also on a two to one margin. Placed against the data presented earlier regarding the lack of difference in family income characteristics of students choosing more costly versus less costly IHEs, these findings suggest that a very complex set of factors are at work in the decision process.

The possible direct effects of institutional selectivity and costs on the choice decision were examined in two ways: by looking at (1) the choices made between institutions with different cost characteristics but the same selectivity categories, and (2) situations where both cost and selectivity vary. Table 9 shows the institutions attended by selectivity and by cost/choice categories. While 587 TAP recipients had a choice between the highest cost institutions and lower cost ones with 252 selecting the higher and 335 selecting the lower, only 144 chose between two institutions in which selectivity was the same but cost differed (79 plus 65). We first looked at the differences in family income of students within selectivity cells -- selectivity is held constant -- and then examined the situation for those students in which both cost and selectivity varied.

Table 9

Choice of IHE Attended between Higher and Lower Cost IHEs with Selectivity as a Constant

Choice by cost	N	Highly Selective	Very Selective	Moderately Selective	Low Selective	Total
Highest cost (4) vs.	252	1 39	2 27	3 12	4 1	79
Lower costs (3, 2, 1)	335	22	24	14	5	65
2nd Highest costs (3) vs.	159	5 2	6 3	7 36	8 10	51
Lower costs (2, 1)	213	1	3	24	18	46
Lower costs (2) vs.	146	9 0	10 0	11 1	12 79	80
Non-resident. (1)	211	0	1	4	84	89
Total	1316	64	58	91	197	410

Due to the low n's in many cells we can only compare family income for cells 1, 2, 3, 7, and 12. With selectivity held constant, there were no differences in family income that were statistically significant between those TAP recipients who chose a higher cost and those who chose a lower cost institution. (See Appendix B for tables.) Differences in TAP award levels were significant at the .01 level for cells 1 and 8 and the .05 level for cell 3, but not for the other three cells. With no statistically significant differences in income, substantial variations in TAP award are presumed to be caused by choices between independent and public sector institutions.

Finally, we examined the extent to which those students who had a choice between institutions that differed with respect to both cost and selectivity, chose the more selective IHE. These comparisons of cost categories are the same as the ones explored above in which we found no statistically significant differences in family income. As Table 10 indicates, those TAP recipients who chose a more costly institution also tended to choose the more selective institution, and in each comparison the differences were significant at the .01 level. Without further examination, however, we must be cautious about concluding that TAP recipients choose to enroll at the more selective IHEs irrespective of cost, because institutional cost and selectivity are highly associated. When we rank ordered all institutions of higher education in New York State according to cost and selectivity characteristics, the gamma coefficient was 71.4 indicating that, on balance, the more selective the institution the higher the cost to attend that institution.*

*Since the institutions were grouped according to cost and selectivity characteristics, the data were ordinal rather than continuous. Gamma was used as a measure of association to determine whether the population correlation of the two ordinal variables is different from 0 (Loether and McTavish, 1974, p. 222).

Table 10

Percentage of TAP Recipients Who Chose the More Selective Institutions Who Also Chose the Higher or Lower Cost IHEs

	Chose to Attend Higher Cost and More Selective IHE		Chose to Attend Lower Cost but More Selective IHE		Significance
	N	Percent	N	Percent	
Highest Costs (>$5,500) vs. Lower Costs (<$5,500)	219	72%	304	21%	.01[1]
2nd Highest Costs ($4,301-5,500) vs. Lower Costs (<$4,300)	135	53%	193	16%	.01
Lower Costs (<$4,300) vs. Non-residential	80	68%	156	6%	.01

[1]Chi square used as test of significance

IV. Conclusions

The findings of this exploratory study of TAP recipients in New York State can be summarized as follows:

1. Average family income is higher for those students who attend high-cost, high-selective institutions than it is for those attending low-cost, low-selective institutions

2. Family income is also higher for those students accepted at two or more institutions than it is for those accepted at only one institution.

3. The average family income of those TAP recipients who chose to attend a high-cost institution when they also had been accepted at one with lower costs, is not statistically different from those who chose a lower-cost institution.

4. When institutional selectivity is the same but costs differ, the family income of those TAP recipients who chose higher-cost institutions is also not statistically different from those who chose lower-cost institutions.

5. When both cost and selectivity differ, most TAP recipients who chose the more costly institution also choose the more selective.

Based on these findings, family income does not seem to play an important role in the decision about which institution to attend when TAP recipients have a choice based on acceptance at two or more institutions with different cost characteristics. However, only three out of every ten TAP recipients included in this study were accepted at two or more institutions with different costs, and the family income level of those students was higher than for the 20 percent accepted at two or more IHEs in the same cost category, or the 50 percent accepted at only one college. Since we can assume that acceptances are related to applications, lower levels of family income may predispose many students from applying to those institutions seen as costing more than they believe they can

afford. The fact that four out of five TAP recipients attending public institutions in New York applied only to institutions in that sector, would seem to support such a conclusion, as would the broad distribution of high ability students -- those with SAT scores above 1200 -- across all cost and selectivity categories of institutions. If TAP recipients are free to choose an institution of higher education in which to enroll, many may not see themselves as free to apply to all institutions at which they might be accepted.

Do these findings mean that New York's Tuition Assistance Program has achieved its "freedom of choice" objective, or that the objective has been achieved for some students but not for others? Without the ability to compare these findings to the patterns of acceptance and enrollment prior to TAP, judgments about program effects can only be speculative. It appears possible that when students and their families get to the point of making a choice between two or more acceptances, that income is not a key factor in the decision. Similarly, knowledge about student assistance programs may have much to do with the decision about whether to attend college but little effect on decisions about where to attend. The importance of the "whether to attend" decision may be particularly relevant in New York City where 60 percent of TAP recipients reside and where there is a long tradition of attendance at the City University and at non-resident independent institutions in the City.

Income neutrality seems to exist when a narrow definition of freedom of choice is applied. That accomplishment may be a function of TAP or TAP working in conjunction with BEOG, or both programs working in conjunction with the accessibility of public and private non-residential institutions in the metropolitan New York City area.

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Appendix A

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Office of Postsecondary Research, Information Systems
and Institutional Aid
Albany, New York 12230

STUDENT DEMAND STUDY: SURVEY OF TAP RECIPIENTS

1. Please indicate your New York State county of permanent residence by placing the appropriate number (from the list below) in the space at the right. ☐

Albany	1	Franklin	17	Niagara	32	Schenectady	47
Allegany	2	Fulton	18	Oneida	33	Schoharie	48
Bronx	3	Genesee	19	Onondaga	34	Schuyler	49
Broome	4	Greene	20	Ontario	35	Seneca	50
Cattaraugus	5	Hamilton	21	Orange	36	Steuben	51
Cayuga	6	Herkimer	22	Orleans	37	Suffolk	52
Chautauqua	7	Jefferson	23	Oswego	38	Sullivan	53
Chemung	8	Kings (Brooklyn)	24	Otsego	39	Tioga	54
Chenango	9	Lewis	25	Putnam	40	Tompkins	55
Clinton	10	Livingston	26	Queens	41	Ulster	56
Columbia	11	Madison	27	Rensselaer	42	Warren	57
Cortland	12	Monroe	28	Richmond (Staten Island)	43	Washington	58
Delaware	13	Montgomery	29	Rockland	44	Wayne	59
Dutchess	14	Nassau	30	St. Lawrence	45	Westchester	60
Erie	15	New York (Manhattan)	31	Saratoga	46	Wyoming	61
Essex	16					Yates	62

2. What is your present class? (Check one)

Freshman ☐ (1)
Sophomore ☐ (2)
Junior ☐ (3)
Senior ☐ (4)
Other ☐ (5)

3. If you are now a freshman, have you ever attended college before this year?

Yes ☐ (1)
No ☐ (2)

4. Within the year preceding your first college enrollment, did you seriously consider not attending college at all?

Yes ☐ (1)
No ☐ (2)

5. If your response to question 4 was yes, please indicate in the boxes provided at the right the numbers corresponding to the possible reasons listed below. Indicate the one, two, or three reasons you considered in order of importance.

First ☐
Second ☐
Third ☐

1 Insufficient family financial resources
2 Insufficient financial aid promised
3 Insufficient counseling and information concerning colleges and/or available programs
4 Insufficient counseling and information concerning available financial aid
5 Planned to find employment
6 Planned to marry
7 Tired of attending school
8 Underestimated my academic ability

6. In the space provided, enter the name of the institution in which you are now enrolled.

_____
(Institution Name)

7. In the spaces below you are asked to do four things:

a. List the names and locations (State abbreviation) of institutions you had a serious interest in attending during the time you were planning your college education. Do not include the institution in which you are now enrolled.

b. Indicate, by checking the appropriate boxes, whether you applied for admission at each institution listed.

c. Indicate, by checking the appropriate boxes, whether you were accepted at each institution listed.

d. For those institutions to which you applied and were not accepted indicate, by checking the appropriate boxes, those you would have attended had you been accepted.

Institution Name	Location (State abbr.)	Applied for Admission (Check if yes)	Accepted (Check if yes)	Would have Attended (Check if yes)
_____	____	☐	☐	☐
_____	____	☐	☐	☐
_____	____	☐	☐	☐
_____	____	☐	☐	☐
_____	____	☐	☐	☐
_____	____	☐	☐	☐

3. If the full amount of your TAP award had been "portable" (i.e., you could have carried it to a school outside of New York State) where would you have gone to school?

1 I would have enrolled at the school I am now attending ☐ (1)

I would have tried to enroll at a school in (check only one)

2 Vermont ☐ (2)
3 Massachusetts ☐ (3)
4 Connecticut ☐ (4)
5 Maine, New Hampshire or Rhode Island ☐ (5)
6 New Jersey ☐ (6)
7 Pennsylvania ☐ (7)
8 Ohio ☐ (8)
9 A state other than New York and the nine states mentioned. ☐ (9)

IF YOU CHECKED NO. 1 GO TO QUESTION 12

9. If your response to question 8 indicated a desire for an out-of-state college, which type of institution would you have tried to attend? (Check only one)

1 Private two- or four-year college ☐ (1)
2 Public two-year college ☐ (2)
3 Public four-year college ☐ (3)
4 Proprietary business or vocational school ☐ (4)

10. If your response to question 8 indicated a desire for an out-of-state college, how far from your home in New York State would that college have been? (Check only one)

1 Less than 10 miles ☐ (1)
2 10 to 24 miles ☐ (2)
3 25 to 49 miles ☐ (3)
4 50 to 74 miles ☐ (4)
5 More than 74 miles ☐ (5)

11. If your response to question 8 indicated a desire for an out-of-state college, please indicate in order of importance, in the spaces provided at the right, the numbers of the one, two, or three most important reasons why you would have attempted to enroll out-of-state.

1 Better reputation in my field of interest
2 Total cost of program not as expensive
3 Time and cost of commuting
4 General impression of out-of-state school better
5 Influence of friends
6 Influence of parents
7 Influence of counselor or teacher
8 Religious affiliation
9 Better social life

First ☐
Second ☐
Third ☐

12. If only one half of the TAP award had been portable to another state (i.e., you could have carried it to a school outside New York State) what would you have done?

1 I would still have enrolled at the school I am now attending ☐ (1)
2 I would have attempted to enroll at an out-of-state school ☐ (2)

13. How do you describe yourself? (Check only one)

1 American Indian or Alaskan Native ☐ (1)
2 Black (not Hispanic origin) ☐ (2)
3 Asian or Pacific Islander ☐ (3)
4 Hispanic ☐ (4)
5 White (not Hispanic origin) ☐ (5)

14. Please indicate the grade or range closest to most of the grades you received in high school. (Check only one)

1 Mostly A, or 91-100 ☐ (1)
2 Mostly B, or 81-90 ☐ (2)
3 Mostly C, or 71-80 ☐ (3)
4 Mostly D, or 61-70 ☐ (4)

15. Please indicate your combined verbal and math score on the SAT—Scholastic Achievement Test. (Check only one)

1 601-700 ☐ (1)
2 701-800 ☐ (2)
3 801-900 ☐ (3)
4 901-1000 ☐ (4)
5 1001-1100 ☐ (5)
6 1101-1200 ☐ (6)
7 1201-1300 ☐ (7)
8 1301-1400 ☐ (8)
9 1401-1600 ☐ (9)

16. What is the highest level of education you ultimately plan to complete? (Check only one)

1 Doctoral degree, e.g., Ph.D., M.D., J.D. ☐ (1)
2 Master's degree ☐ (2)
3 Baccalaureate degree ☐ (3)
4 Associate degree ☐ (4)
5 Nondegree certification ☐ (5)

->

17. Please estimate your parent's or guardian's total gross income from all sources this calendar year.

1	Under $6,000	☐ (1)
2	$6,000 to $8,999	☐ (2)
3	$9,000 to $11,999	☐ (3)
4	$12,000 to $14,999	☐ (4)
5	$15,000 to $19,999	☐ (5)
6	$20,000 to $24,999	☐ (6)
7	$25,000 or above	☐ (7)

18. Please estimate what the total cost will be for the first complete year at the institution you are now attending. All expenses — tuition and fees, room and board, books, travel, etc. — should be included. Financial aid should not be deducted.

$_____
(whole dollars)

19. Of the amount you entered in response to question 18,

a. What percent will be contributed by your parents or guardians? _____%

b. What percent will be from awards, grants and scholarships? _____%

c. What percent will be from long term loans (i.e., loans of four to five years or longer)? _____%

d. What percent will be from your own personal funds and employment (including those of your spouse, if applicable) _____%

Total should add to 100%

Appendix B

Table B.1

Comparison of TAP Recipients Who Had a Choice between Attending Highly Selective (4) IHEs which Were High Cost (4) and Lower Cost

Category Four	Chose to Attend High Cost (4)			Chose to Attend Lower Cost (3, 2, 1)			
Variable	N	Mean	Coefficient of Variation	N	Mean	Coefficient of Variation	Significance
Income	37	$11,071	.51	21	$12,087	.43	-*
TAP Award	36	$ 304	.51	21	$ 384	.85	.01*
% White	38	(100%)	-	20	(84%)	-	-**
% 1 or more siblings in IHEs	39	(41%)	-	23	(35%)	-	-**
SAT Index	39	3.54	.17	22	3.27	.29	-*
Ed. Asp. Index	39	1.05	.21	22	1.14	.31	-*

*t-test used as statistical measure
**chi square used as statistical measure

Table B.2

Comparison of TAP Recipients Who Had a Choice between Attending Moderately Selective (2) IHEs which Were High Cost (4) and Lower Cost (3, 2, 1)

Category Two	Chose to Attend High Cost (4)			Chose to Attend Lower Cost (3, 2, 1)			
Variable	N	Mean	Coefficient of Variation	N	Mean	Coefficient of Variation	Significance
Income	12	$9,620	.60	12	$12,181	.51	-*
TAP Award	12	$ 990	.45	13	$ 590	.87	.05*
% White	12	(75%)	-	12	(75%)	-	-**
% 1 or more siblings in IHEs	12	(25%)	-	14	(21%)	-	-**
SAT Index	12	2.42	.48	13	2.23	.61	-*
Ed. Asp. Index	12	1.42	.36	14	1.36	.37	-*

*t-test used as statistical measure
**chi square used as statistical measure

Table B.3

Comparison of TAP Recipients Who Had a Choice between Attending Moderately Selective (2) IHEs which Were Medium Cost (3) and Lower Cost (2, 1)

Category Two	Chose to Attend Medium Cost (3)			Chose to Attend Lower Cost (2, 1)			
Variable	N	Mean	Coefficient of Variation	N	Mean	Coefficient of Variation	Significance
Income	36	$11,446	.53	24	$10,113	.56	-*
TAP Award	36	$ 911	.50	24	$ 731	.70	-*
% White	35	(83%)	-	23	(96%)	-	-**
% 1 or more siolings in IHEs	38	(34%)	-	24	(29%)	-	-**
SAT Index	38	2.18	.49	23	2.17	.43	-*
Ed. Asp. Index	36	1.36	.44	23	1.30	.36	-*

(No results significant)
*t-test used as statistical measure
**chi square used as statistical measure

Table B.4

Comparison of TAP Recipients Who Had a Choice between Attending Low Selective (1) IHEs which Were Medium Cost (3) and Lower Cost (2, 1)

Category One	Chose to Attend Medium Cost (3)			Chose to Attend Lower Cost (1, 2)			
Variable	N	Mean	Coefficient of Variation	N	Mean	Coefficient of Variation	Significance
Income	10	$11,106	.44	18	$9,387	.52	-*
TAP Award	10	$ 896	.54	18	$ 464	.55	.01*
% White	11	(91%)	-	18	(83%)	-	-**
% 1 or more siblings in IHEs	11	(36%)	-	18	(44%)	-	-**
SAT Index	8	1.38	.54	13	1.38	.55	-*
Ed. Asp. Index	11	2.00	.39	18	1.56	.45	-*

*t-test used as statistical measure
**chi square used as statistical measure

Table B.5

Comparison of TAP Recipients Who Had a Choice between Attending Low Selective (1) IHEs which Were Low Cost (2) and Non-Residential (1)

Category One	Chose to Attend Low Cost (2)			Chose to Attend Lowest Cost Non-residential			
Variable	N	Mean	Coefficient of Variation	N	Mean	Coefficient of Variation	Significance
Income	79	$10,235	.43	84	$9,555	.52	-*
TAP Award	79	$ 475	.79	86	$ 426	.68	-*
% White	80	(88%)	-	86	(84%)	-	-**
% 1 or more siblings in IHEs	85	(29%)	-	89	(30%)	-	-**
SAT Index	56	1.91	.51	57	2.44	.43	.01*
Ed. Asp. Index	84	2.10	.39	89	1.67	.47	.01*

*t-test used as statistical measure
**chi square used as statistical measure

Table B.6

Comparison of Results on Choice Categories
One, Two and Three with Selectivity as a Constant

Variable	S4* and C4* IHEs vs. S4/ C3, C2, and C1 IHEs (Table 35)	S3* and C4* IHEs vs. S3/ C3, C2, and C1 IHEs (Table 36)	S2* and C4* IHEs vs. S2/ C3, C2, and C1 IHEs (Table 37)	S2* and C3* IHEs vs. S2/ C2 and C1 IHEs (Table 38)	S1* and C3* IHEs vs. S1/ C2 and C1 IHEs (Table 39)	S1* and C2* IHEs vs. S1/ C1 IHEs (Table 40)
Income	--	--	--	--	--	--
TAP Award	.01 Higher in (4)	--	.05 Higher in (4)	--	.01 Higher in (4)	--
% White	--	--	--	--	--	--
% 1 or more siblings in IHEs	--	--	--	--	--	--
SAT Index	--	--	--	--	--	.01 Higher in (1)
Ed. Asp. Index	--	--	--	--	--	.01 Higher in (1)

*S = Selectivity
*C = Cost

"A New Model for Federal Change Agent Programs", Sol H. Pelavin*

22.14/Table 4 (Individually Scheduled Papers Division G, and Division A), Thursday Morning, 8:45-9:30, Civic Center (Room 200, 3rd Floor).

"An Empirical Comparison of Four Indicators of Test Speededness", Nick Maruhnich*

Session: 23.12/Effects from Bias, Test-Wiseness, Speededness and Guessing (Critique, Division D), Thursday Morning, 10:35-12:05, Sheraton (Clarendon, 3rd Floor)

"Assessing and Improving the Accuracy of Title I Evaluation with Grade-Appropriate Tests", Edward Moran, West Virginia Department of Education; Robert F. Baker* and Nick Maruhnich*

Session: 23.13/Methods of Program Evaluation (Paper Presentation, Division D), Thursday Morning, 10:35-12:05, Sheraton (Dalton Room, 3rd Floor)

"Policy Implications Analysis", Michael Everett, Indiana University; A. Jackson Stenner*

Session: 23.20/Evaluation Potpourri (Critique, Division H), Thursday Morning, 10:45-12:05, Sheraton (Gardner, 3rd Floor)

"An Application of Psychometric Procedures in the Non-Psychological Domain: Development of Dissemination System Scales Using Classical Test Theory and Rasch Scaling Techniques", Robert F. Baker*, Jolinda K. Decad*, Doren L. Madey*, and A. Jackson Stenner*

Session: 24.19/Applications of Latent Trait Theory, Sequential Analysis and Multi Dimensional Scaling, (Paper Presentation, Division D), Thursday Afternoon, 12:35-1:55, Sheraton (Beacon F, 3rd Floor)

"Tuition Assistance and Income Neutrality in College Choice", William Shaut, State University of New York, Central Administration; Robert J. Goettel*

Session: 24.31/The Impact of Student Financial Aid on Postsecondary Education (Critique, SIG/Postsecondary Education), Thursday Afternoon, 12:25-1:55, Civic Center (Revere, 3rd Floor).

"Evaluating Title I Early Childhood Programs: Problems, the Applicability of Model C, and Several Evaluation Plans", Keith McNeil* and Emily A. Findlay*

Session: 26.05/Multiple Regression Analysis - Application and Interpretation (Symposium, SIG/Multiple Linear Regression), Thursday Afternoon, 4:05-6:05, Sheraton (Constitution, 2nd Floor)

Discussant: Judy McNeil*

*NTS Employees

"Development of Comprehensive State Dissemination Plans: An Overview of Present Status", Joseph F. Haenn*

"Developing Empirical Descriptions of Educational Linkage Agents", Doren L. Madey* and Robert F. Baker*

Session: 3.11/ Perspectives on Knowledge Utilization at the System, Organizational and Individual Levels (Critique, SIG/Research Utilization), Monday Afternoon, 4:05-5:35, Sheraton (Exeter, 3rd Floor).

"State Grants for Capacity Building in Dissemination", Eugene C. Royster*

Session: 5.18/Relating Research to Policy on Dissemination Symposium, Division A), Tuesday Morning, 8:15-10:15, Sheraton (Beacon G, 3rd Floor).

"Effects of Magnet School Enrollment Changes on Desegregation", John C. Larson, Montgomery County Schools; Eugene C. Royster*

Session: 6.10/Perspectives on the Effectiveness of Desegregation (Paper Presentation, Division G), Tuesday Morning, 8:45-10:15, Civic Center (Room 202, 3rd Floor).

"The Distributions of NCE, Percentile and Grade Equivalent Scores Among Twelve Nationally Standardized Achievement Tests", Thomas B. Williams*

Session: 6.12/Achievement Testing: Methodological Issues (Critique, Division H), Tuesday Morning, 8:45-10:15, Civic Center (Revere, 3rd Floor).

"History and Development of the Fund for the Improvement of Postsecondary Education", Jan Shefter*, Diane Pelavin*, and Martin Orland*

"An Analysis of the Fund's Comprehensive Grant Program", Becky Jon Hayward*, Dan Johnston* and Diane Pelavin*

"An Analysis of the Achievements and Impacts of the Fund's Projects", Diane Pelavin*, Dan Johnston* and Jan Shefter*

"An Analysis of the Fund's Managemet Strategy", Martin Orland*, Becky Jon Hayward* and Jan Shefter*

"Hypotheses About the Successes of the Fund for the Improvement of Postsecondary Education", Sol H. Pelavin*, Martin Orland* and Becky Jon Hayward*

Session: 17.22/A Study of the Fund for the Improvement of Postsecondary Education (Symposium, SIG/Postsecondary Education), Wednesday Afternoon, 2:15-3:45, Sheraton (Beacon F, 3rd Floor).

*NTS Employees

"Reasons Why Testing and Evaluations Don't Inform", Joseph F. Haenn*

Session: 28.19/SEA and LEA Strategies to Use Testing and Evaluation Information for Local School Improvement (Symposium, Division H), Friday Morning, 8:15-10:15, Sheraton (Constitution, 2nd Floor)

Critic: Robert J. Goettel*

"The Regression Route to Reliability Coefficients", Bob Burton, L. Miranda & Associates; A. Jackson Stenner*

Session: 30.13/Test Reliability (Critique, Division D), Friday Morning, 10:35-12:05, Sheraton (Clarendon, 3rd Floor)

"What is Educational Significance?", Michael B. Bunch*

Session: 30.20/Evaluation Research: Impact on Policy (Critique, Division H), Friday Morning, 10:35-12:05, Sheraton (Gardner, 3rd Floor)

"Toward a Conceptual Framework for Understanding State and Local Implementation of Federal Aid Programs in Education", Martin E. Orland* and Robert J. Goettel*

Session: 30.22/Implementing Organizational Change (Paper Presentation, Division A), Friday Morning, 10:35-12:05, Sheraton (Beacon G, 3rd Floor)

"Test Item Development: An Empirical Study of Practical Problems", Nick Maruhnich* and Thomas Dunning*

Session: 32.09/Issues in Test Construction and Interpretation (Paper Presentation, Division D), Friday Afternoon, 2:15-3:45, Sheraton (Clarendon, 3rd Floor)

"Identification of Oral Communication Skills in Children and an Analysis of Developmental Differences in Performance", Jolinda K. Decad*

Session: 32.18/Oral Reading and Oral Communication in Children (Critique, Division C), Friday Afternoon, 2:15-3:45, Civic Center (Hancock, 3rd Floor)

*NTS Employees

NTS RESEARCH CORPORATION

NTS Research Corporation is a private corporation specializing in research and development, policy analysis, test scoring services, and market and survey analysis for Federal, state and local agencies as well as business and industry. Founded in 1973, NTS is a rapidly growing and vital company that reflects the research and development community in which it exists. Located in Durham, North Carolina, near Duke University, the University of North Carolina at Chapel Hill, North Carolina State University, and the Research Triangle Park, a nationally renowned research center, NTS complements its own highly skilled professional staff with the services of both local and national experts.

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Below is a brief listing of some recent and continuing NTS contracts:

- Educational Policy Development Center for Educational Quality and Improvement.
  Office of the Assistant Secretary for Education/Policy Development.
- Evaluation of the Fund for the Improvement of Post-Secondary Education.
  Department of Health, Education and Welfare.
- Evaluation of State Dissemination Grants Program for Capacity Building.
  National Institute of Education.
- Evaluation of Urban Area Experience-Based Career Education Program.
  Office of Career Education, US Office of Education.
- Follow-Up Study of Patients Who Had I-131 and Other Diagnostic Procedures During Childhood.
  DHEW/FDA Bureau of Radiological Health.
- National Evaluation of Headstart Educational Services.
  Administration for Children, Youth and Families.
- Operation of the ESEA Title I Technical Assistance Center, HEW Region III.
  Office of Evaluation and Dissemination, US Office of Education.
- Delaware Item Pool Development.
  Delaware State Department of Public Instruction.
- Evaluation of the Comprehensive Project in Adult Functional Literacy Education.
  North Carolina State Board of Community Colleges.
- ESEA Title I Evaluation: District of Columbia.
  District of Columbia Public Schools.
- Educational Policy Development Center for Educational Quality and Improvement.
  Office of the Assistant Secretary for Education/Policy Development.